MATERNAL EXPOSURE TO POLYCHLORINATED BIPHENYLS AND LOW BIRTH WEIGHT AMONG RESIDENTS OF ANNISTON, ALABAMA

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Background and Aims: Previous studies suggested an association between polychlorinated biphenyls (PCBs) and birth weight. We investigated the association between maternal PCBs, preterm birth and low birth weight (<2500 grams) in a population with elevated exposure to PCBs.
Methods: From 2005-2006, the Anniston Community Health Survey collected maternal blood for total PCBs (sum of 35 congeners) and self-reported information on potential sources of PCB exposure including consumption of local fish, livestock and clay by in-person questionnaire. For each child born between 1936 and 2006, women self-reported information on preterm births (yes vs. no) and birth weight. Multiple imputation was used to impute missing values for PCB's, birth weight, and covariates. This resulted in a sample size of 604 mothers and 1477 infants. To take into account the correlation between infants with the same mother we included a random intercept for each mother using generalized estimating equations, specifying a binomial distribution and logit link.
Results: Adjusted for covariates, we did not observe an association between log transformed total PCBs and preterm births, low birth weight, or low birth weight among term infants. However, consumption of local fish was associated with an increased adjusted odds of low birth weight (OR=1.9, 95% CI: 1.2, 3.1) and low birth weight among term infants (OR=2.1, 95% CI: 1.1, 3.9). Consumption of local livestock was associated with an increased adjusted odds of preterm birth (OR= 2.3, 95% CI: 1.4, 3.7), low birth weight (OR= 2.2, 95% CI: 1.3, 3.5), and low birth weight among term infants (OR= 1.8, 95% CI: 0.96, 3.2).
Conclusions: In the Anniston population, maternal consumption of local fish and livestock was associated with infant preterm birth and low birth weight. Questionnaire responses regarding local exposure routes may be a better proxy for historical PCB exposures than current serum concentrations.